

# DOEPFER MUSIKELEKTRONIK GMBH DARK ENERGY

## Additional technical information

The instructions collected in this document are intended only for experienced users who want to modify or expand the functions of **Dark Energy**. For some of the modifications/expansions the warranty may be void ! Therefore we recommend to ask an authorized Doepfer service partner to carry out the modifications. Any damage (mechanical or electrical) caused by inappropriate handling is not covered by warranty and treated as a repair liable to pay costs.

### Mechanical connection of several Dark Energy's

Two or more Dark Energy's can be mounted together in two ways:

- with wooden side plates between the units
- without wooden side plates between the units

Procedure:

→ has to be translated

- *Entfernen des Bodenblechs durch Lösen der 4 Schrauben an der Geräte-Unterseite*
- *Entfernen jeweils eines Seitenteils durch Lösen der beiden Schrauben an den Innenseiten des Gehäuses, mit denen die Seitenteile befestigt sind. Achtung! Hier ist ein passender, kurzer Kreuzschlitzschraubenzieher erforderlich. Wird ein langer Schraubenzieher verwendet und schräg eingeführt, kann u.U. die Schraube beschädigt werden.*
- *Bei Montage der Geräte ohne Holzseitenteil werden die beiden Gehäuse mit zwei kurzen Gewindeschrauben (ca. M3x6...10), Muttern und Zahnscheiben aneinander montiert. Hierbei werden die Löcher im Metallgehäuse verwendet, an denen zuvor die Seitenteile montiert waren.*
- *Bei Montage der Geräte mit Holzseitenteil müssen die beiden Montagelöcher in dem Holzseitenteil durchgebohrt werden (ca. 3-3,5 mm Bohrer). Die beiden Gehäuse und das dazwischen liegende Holz-Seitenteil werden mit zwei längeren Gewindeschrauben (ca. M3x20...25), Muttern und Zahnscheiben aneinander montiert. Hierbei werden die Löcher im Metallgehäuse verwendet, an denen zuvor die Seitenteile montiert waren. Falls die Geräte auch untereinander über Midi-Out/In verlinkt werden sollen, muss in dem Seitenteil in der Mitte ein Loch zur Durchführung des Link-Kabels gebohrt werden (mindestens ca. 7 mm). Näheres hierzu weiter unten.*

### Linking of several Dark Energy's via Midi Out/Midi In

Unfortunately there was not sufficient space for a Midi out socket at the rear panel. But it's possible to link two or more Dark Energy's internally via Midi out/Midi in. For this two pin headers (**JP5** and **JP6**) are available at the supply/interface board (that's the board mounted at the rear panel). They are located on top and bottom of the Midi optocoupler PC900. JP5 is the Midi output, JP6 the Midi input. The left pin of both pin headers is GND, the right pin is the "hot" pin (i.e. Midi in or Midi out).

To connect two Dark Energy's via Midi JP5 of the first unit has to be wired to JP6 of the second unit. A suitable link cable is available soon. Pay attention to the correct polarity of the cables (GND → GND and hot pin → hot pin). If the polarity is wrong nothing can be damaged but the link function will not work. The link cable is fed through the holes in the side plates of the case. If a wooden side plate is used between the two units the side plate has to be drilled in addition.

Pay attention that the first unit has to be programmed for **stack mode**. Details in the user's guide.

Probably from August 2009 a complete link set will be available (link cable, drilled wooden side plate, screws and nuts for mounting with or without wooden side plate between the units).

Firmware-Update via USB

→ still missing

# Position and Function of the Jumpers and trimming potentiometers Voice Board



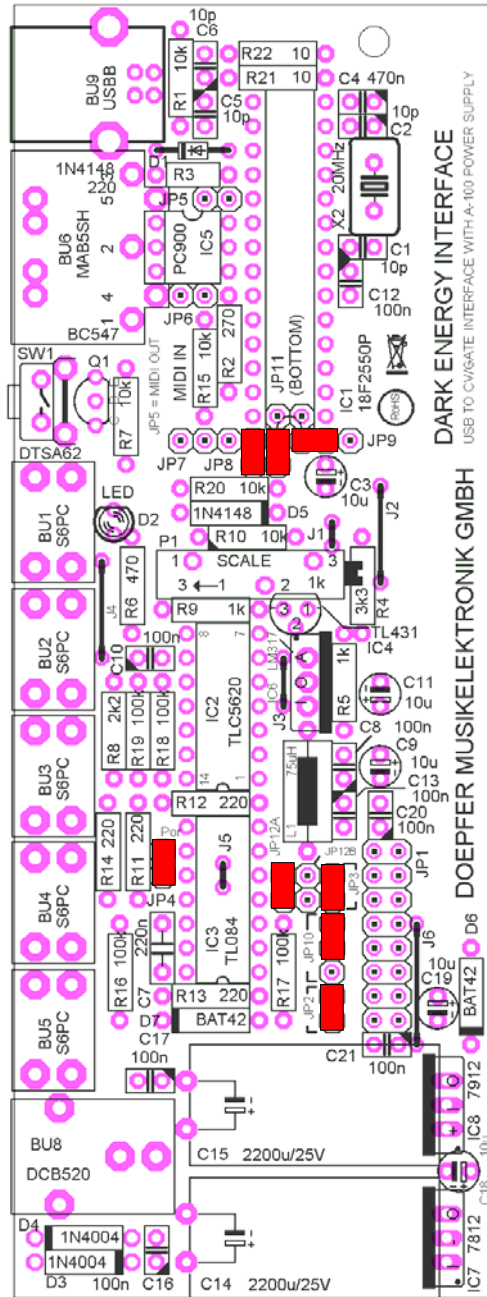
### Function of the Jumpers (Dark Energy Voice Board):

Name	Function	Explanation	Factory default
JP1	Bus Connector	16 pin connection to supply/interface board (compatible to A-100 bus)	connected to supply/interface board via ribbon cable
JP2	CV1 Bus	Connects the CV line of JP1 to the VCO frequency control voltage input (works in addition to the VCO F socket)	<b>installed</b>
JP3	Gate bus	Connects the Gate line of JP1 to the switching contact of the ADSR Gate socket	<b>installed</b>
JP4	VCO tune range	Adjusts the range of the VCO tune control: Installed → tune range some octaves Installed → tune range some semitones	<b>installed</b> (one pin only)
JP5	Audio → Bus/+5V	Connects the audio output of the voice board to an auxiliary pin of JP1. Required if socket CV4 is used as audio output.	<b>installed</b>
JP6	Relation VCO/ext. signal	Adjusts the loudness relation of the internal VCO and the external audio signal: installed → VCO only not installed → VCO and external signal with same level	<b>installed</b> (one pin only)
JP7	Inverter input	Connects LFO1 output to the internal inverter	<b>installed</b>
JP8	Inverter output	Connects the output of the internal inverter to the socket /LFO1 "/" means inverted, i.e. the factory default is inverted LFO1, can be used for other applications (e.g. inverted ADSR or LFO2 output in combination with JP9 or JP10, or direct output of LFO1 or LFO2 without inverting)	<b>installed</b>
JP9	ADSR out	Internal ADSR output	- (no jumper)
JP10	LFO2 out	Internal LFO2 output	- (no jumper)
JP11	VCF tracking source	Selects the CV source for VCF tracking (can be turned on / off / half by means of the Track switch): Upper position: VCF tracking controlled by the VCO F socket Lower position: VCF tracking controlled by the CV line of JP1	<b>installed</b> (lower position)
JP12	free bus pin -> VCF	Connects an unused pin of JP1 to the switching contact the VCF F socket. Not supported by the supply/interface board.	<b>not used</b>

### Function of the trimming potentiometers (Dark Energy Voice Board):

Name	Function	Explanation	Factory default
P17	VCO Scale	adjusts the 1V/octave characteristics of the socket "VCO F" or the bus CV	<b>adjusted to 1.00V/octave</b>
P18	VCO Offset	adjusts the VCO frequency offset	<b>64 Hz @ center position of the VCO Tune control and Range switch in center position</b>
P19	VCO Octave Switch +	adjusts the upper position of the VCO range switch (+ 1 octave)	<b>adjusted to +1 octave</b>
P20	VCO Octave Switch -	adjusts the lower position of the VCO range switch (- 1 octave)	<b>adjusted to -1 octave</b>
P21	VCF Scale	adjusts the 1V/octave characteristics of the socket "VCF F" or bus CV (if the tracking switch is in the lower position "full")	<b>adjusted to 1V/octave, VCF in self-oscillation (Resonance control fully CW)</b>
P22	VCF Offset	adjusts the VCF frequency offset	<b>~ 10 Hz @ CCW position of the VCF Frq. control, VCF in self-oscillation (Resonance control fully CW, all VCF modulations off)</b>
R23	Minimum VCA level	adjusts the minimum VCA level (i.e. when VCA A control is fully CCW and all VCA modulations are off)	10k (a smaller value leads to a smaller minimum VCA level)

# Position and Function of the Jumpers and trimming potentiometers Supply/Interface Board



JP11 entfällt  
(war auf Unterseite flach legend mit Jumper vorgesehen)

7812/7912 = legend mit Kühlkörper !

## Function of the Jumpers and Trimming Potentiometers (Dark Energy Interface/Supply Board):

Name	Function	Explanation	Factory default
JP1	Bus Connector	16 pin connection to voice board (compatible to A-100 bus)	connected to voice board via ribbon cable
JP2	Gate bus	Connects the Gate line of JP1 to the gate output of the USB/Midi interface	<b>installed</b>
JP3	CV1 bus	Connects the CV line of JP1 to the CV1 output of the USB/Midi interface	<b>installed</b>
JP4	Glide Option	An diese 2-polige Stiftleiste kann statt der Kurzschlussbrücke (Jumper) ein Drehpotentiometer (ca. 1M logarithmisch / A1M) angeschlossen werden um eine Gleitfunktion für CV1 zu erhalten (Portamento)	<b>installed</b>
JP5	Midi Out	This two pin connector is a Midi Output and can be used to daisy-chain two DARK ENERGY via Midi Out/Midi In. For this the Midi Out of the first device has to be connected to Midi In of the second device via a suitable two wire cable. The first unit has to be set into the "Stack Mode" (details in the user's guide). The left pin of JP5 is GND, the right pin is Midi Out	<b>open</b>
JP6	Midi In	This two pin connector is a Midi Input and can be used to daisy-chain two DARK ENERGY via Midi Out/Midi In. For this the Midi Out of the first device has to be connected to Midi In of the second device via a suitable two wire cable. The left pin of JP6 is GND, the right pin is Midi In.	<b>open</b>
JP7/ JP8	Firmware Update	To these single row pin headers several jumpers can be installed in different ways. In the standard mode two jumpers have to be installed as shown in the sketch. <b>Only if the firmware of the device has to be updated the positions of the jumpers have to be changed...</b> <b>→ coming soon</b>	<b>two jumpers installed as shown in the sketch</b>
JP9	Reset/Program	This jumper is used only during the programming in the factory. It has to remain always in the position shown in the sketch !	<b>installed (left position)</b>
JP10	Function of socket CV4	With this jumper one can select if the socket labelled "CV4" outputs really CV4 or if it is used as a second audio output (in parallel to the audio output socket at the front panel). In the upper position it works as CV4 (factory setting), in the lower position as audio output.	<b>installed (upper position)</b>
JP11	not used	this pin header is not assembled (it would be on the bottom side of the pcb)	<b>not used</b>
P1	CV1 Scale	adjusts the 1V/octave characteristics of CV1	<b>adjusted to 1.00V/octave</b>
P2	Glide	optional rotary potentiometer for glide function (portamento) of CV1, is connected to JP4 (instead of the jumper), recommended value: 1M logarithmic (A1M)	not installed